$$a_i^k(n+1) = \sum_{j=1}^{2} w_{ij}^k o_j^k(n) + b_i^k - f_i^k(n), i = 1, 2; k = 1, 2, 3, 4 \tag{1}$$

$$f_i^k(n) = \begin{cases} \gamma F^k(n)\cos(o_i^k(n)), i = 1, \\ \gamma F^k(n)\sin(o_i^k(n)), i = 2, \end{cases} \tag{2}$$

$$o_i^k(n) = \tanh(a_i^k(n)) \tag{3}$$

$$\sum_{k=1}^{4} F^k(n) = Mg \tag{4}$$

$$\mathbf{P}_k = (o_1^k(n), o_2^k(n)) \tag{5}$$

$$\phi = (\frac{\mathbf{P}_1\mathbf{P}_2}{||\mathbf{P}_1||||\mathbf{P}_2||}, \frac{\mathbf{P}_1\mathbf{P}_3}{||\mathbf{P}_1||||\mathbf{P}_3||}, \frac{\mathbf{P}_1\mathbf{P}_4}{||\mathbf{P}_1||||\mathbf{P}_4||}) \tag{6}$$

From the initial condition:
$b_i^k = 0.001$,
$o_i^k(0) = 0.0$
The system will converge to the following result:

$$\phi = (0, 0, 1) \tag{7}$$

$$a_{ik}(n+1) = \sum_{j=1}^{2} w_{ij} o_{jk}(n) + b_{ik} - f_{ik}(n), i = 1, 2; k = 1, 2, 3, 4 \tag{8}$$

$$f_{ik}(n) = \begin{cases} \gamma F_{k3}(n)\cos(o_{ik}(n)), i = 1, \\ \gamma F_{k3}(n)\sin(o_{ik}(n)), i = 2, \end{cases} \tag{9}$$

$$o_{ik} = \tanh(a_{ik}) \tag{10}$$

$$\mathbf{o} = \begin{pmatrix} o_{11} & o_{12} & o_{13} & o_{14} \\ o_{21} & o_{22} & o_{23} & o_{24} \end{pmatrix} \tag{11}$$

$$\theta = \Theta\mathbf{o} + \beta \tag{12}$$

$$\mathbf{AF} = \mathbf{b} \tag{13}$$

$$\mathbf{A} = \begin{pmatrix} I_{3\times3} \dots I_{3\times3} \\ \mathbf{P}_1 \dots \mathbf{P}_k \end{pmatrix} \tag{14}$$

$$\mathbf{F} = \begin{pmatrix} \mathbf{F}_1 \dots \mathbf{F}_k \end{pmatrix}^\top \tag{15}$$

$$\mathbf{b} = \begin{pmatrix} m(\ddot{\mathbf{P}}_c + \mathbf{g}) & \mathbf{I}_G\dot{\omega} \end{pmatrix}^\top \tag{16}$$